

SUBJECT: SuperMAX Electrometer – Temperature Correction

The following information is provided as a service to our users and customers:

The SuperMAX electrometer is an advanced, two-channel electrometer used for measurements in ionizing radiation environments. It is well known that the components of electronic instruments can be sensitive to temperature change and the SuperMAX electrometer is no exception. In-house measurements have shown that the internal temperature of the SuperMAX takes about 2 hours to equilibrate after starting from room temperature in an unpowered state. This results in the interior being approximately 6 °C above the ambient room temperature. If not corrected for, this temperature change can affect measurements, especially in the low range. Since it is not desirable for users to allow 2 hours of warm-up, a temperature correction algorithm was implemented in the SuperMAX. This algorithm corrects for the zero drift that occurs as the temperature changes in the enclosure and allows the device to function acceptably with essentially zero warm-up time.

The required temperature correction can shift as the unit ages which may cause zero drift, or charge collection measurements that trend up or down as the SuperMax warms up. This is not of consequence for most users if the amount of drift is small compared with the measurement signal level. Additionally, the user can simply re-zero as needed, as described in the user manual. However, it may be a concern for users performing low level measurements, such as with the Exradin W1.

If desired, a SuperMax returned to Standard Imaging for recalibration or service can be re-profiled for the temperature correction at no charge. This process automatically recalculates the temperature correction coefficients for both ranges and then verifies it is working properly.

If zero drift or measurement deviation is suspected, please perform the following troubleshooting steps:

1. Make sure the SuperMAX has been unplugged and allowed to cool to room temperature for at least 4 hours.
2. Plug in the SuperMAX and turn on the display.
3. Switch to dual-channel mode and put both channels in low range.
4. Zero the SuperMAX with nothing connected to the Triaxial inputs and the dust caps in place.



TECHNICAL NOTE

DATE
10-05-15

PAGE
page 2 of 2

NUMBER
4811-00

MARKETS

SUBJECT: SuperMAX Electrometer – Temperature Correction

5. If the rate reading is more than +/- 10 fA on either channel over the course of 2 hours, you may send your SuperMax back to SI to re-profile the temperature correction. A return authorization can be requested at support@standardimaging.com
6. If checking the high range, the rate reading threshold is +/- 5 pA.

Note that the display is the primary source of heat inside the enclosure, so simply leaving the SuperMax plugged in with the display off is not a complete workaround.